



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : F02D 33/02, F02B 37/24		A1	(11) International Publication Number: WO 97/45633 (43) International Publication Date: 4 December 1997 (04.12.97)
(21) International Application Number: PCT/GB97/01419 (22) International Filing Date: 23 May 1997 (23.05.97)		(81) Designated States: CN, GB, JP, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(30) Priority Data: 9611015.0 25 May 1996 (25.05.96) GB		Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
(71) Applicant (for all designated States except US): HOLSET ENGINEERING CO. LIMITED [GB/GB]; St. Andrews Road, Huddersfield HD1 6RA (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): CADDY, Stephen, William [GB/GB]; 10 Osprey Drive, Netherton, Huddersfield, W. Yorks HD4 7RG (GB). (74) Agent: ALLMAN, Peter, John; Marks & Clerk, Sussex House, 83-85 Mosley Street, Manchester M2 3LG (GB).			
(54) Title: VARIABLE GEOMETRY TURBOCHARGER CONTROL SYSTEM			
<img alt="Schematic diagram of the Variable Geometry Turbocharger Control System. The diagram shows a complex network of pressure sensors (P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41, P42, P43, P44, P45, P46, P47, P48, P49, P50, P51, P52, P53, P54, P55, P56, P57, P58, P59, P60, P61, P62, P63, P64, P65, P66, P67, P68, P69, P70, P71, P72, P73, P74, P75, P76, P77, P78, P79, P80, P81, P82, P83, P84, P85, P86, P87, P88, P89, P90, P91, P92, P93, P94, P95, P96, P97, P98, P99, P100, P101, P102, P103, P104, P105, P106, P107, P108, P109, P110, P111, P112, P113, P114, P115, P116, P117, P118, P119, P120, P121, P122, P123, P124, P125, P126, P127, P128, P129, P130, P131, P132, P133, P134, P135, P136, P137, P138, P139, P140, P141, P142, P143, P144, P145, P146, P147, P148, P149, P150, P151, P152, P153, P154, P155, P156, P157, P158, P159, P160, P161, P162, P163, P164, P165, P166, P167, P168, P169, P170, P171, P172, P173, P174, P175, P176, P177, P178, P179, P180, P181, P182, P183, P184, P185, P186, P187, P188, P189, P190, P191, P192, P193, P194, P195, P196, P197, P198, P199, P200, P201, P202, P203, P204, P205, P206, P207, P208, P209, P210, P211, P212, P213, P214, P215, P216, P217, P218, P219, P220, P221, P222, P223, P224, P225, P226, P227, P228, P229, P229, P230, P231, P232, P233, P234, P235, P236, P237, P238, P239, P240, P241, P242, P243, P244, P245, P246, P247, P248, P249, P250, P251, P252, P253, P254, P255, P256, P257, P258, P259, P259, P260, P261, P262, P263, P264, P265, P266, P267, P268, P269, P269, P270, P271, P272, P273, P274, P275, P276, P277, P278, P279, P279, P280, P281, P282, P283, P284, P285, P286, P287, P288, P289, P289, P290, P291, P292, P293, P294, P295, P296, P297, P298, P299, P299, P300, P301, P302, P303, P304, P305, P306, P307, P308, P309, P309, P310, P311, P312, P313, P314, P315, P316, P317, P318, P319, P319, P320, P321, P322, P323, P324, P325, P326, P327, P328, P329, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P339, P340, P341, P342, P343, P344, P345, P346, P347, P348, P349, P349, P350, P351, P352, P353, P354, P355, P356, P357, P358, P359, P359, P360, P361, P362, P363, P364, P365, P366, P367, P368, P369, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P379, P380, P381, P382, P383, P384, P385, P386, P387, P388, P389, P389, P390, P391, P392, P393, P394, P395, P396, P397, P398, P399, P399, P400, P401, P402, P403, P404, P405, P406, P407, P408, P409, P409, P410, P411, P412, P413, P414, P415, P416, P417, P418, P419, P419, P420, P421, P422, P423, P424, P425, P426, P427, P428, P429, P429, P430, P431, P432, P433, P434, P435, P436, P437, P438, P439, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P449, P450, P451, P452, P453, P454, P455, P456, P457, P458, P459, P459, P460, P461, P462, P463, P464, P465, P466, P467, P468, P469, P469, P470, P471, P472, P473, P474, P475, P476, P477, P478, P479, P479, P480, P481, P482, P483, P484, P485, P486, P487, P488, P489, P489, P490, P491, P492, P493, P494, P495, P496, P497, P498, P499, P499, P500, P501, P502, P503, P504, P505, P506, P507, P508, P509, P509, P510, P511, P512, P513, P514, P515, P516, P517, P518, P519, P519, P520, P521, P522, P523, P524, P525, P526, P527, P528, P529, P529, P530, P531, P532, P533, P534, P535, P536, P537, P538, P539, P539, P540, P541, P542, P543, P544, P545, P546, P547, P548, P549, P549, P550, P551, P552, P553, P554, P555, P556, P557, P558, P559, P559, P560, P561, P562, P563, P564, P565, P566, P567, P568, P569, P569, P570, P571, P572, P573, P574, P575, P576, P577, P578, P579, P579, P580, P581, P582, P583, P584, P585, P586, P587, P588, P589, P589, P590, P591, P592, P593, P594, P595, P596, P597, P598, P599, P599, P600, P601, P602, P603, P604, P605, P606, P607, P608, P609, P609, P610, P611, P612, P613, P614, P615, P616, P617, P618, P619, P619, P620, P621, P622, P623, P624, P625, P626, P627, P628, P629, P629, P630, P631, P632, P633, P634, P635, P636, P637, P638, P639, P639, P640, P641, P642, P643, P644, P645, P646, P647, P648, P649, P649, P650, P651, P652, P653, P654, P655, P656, P657, P658, P659, P659, P660, P661, P662, P663, P664, P665, P666, P667, P668, P669, P669, P670, P671, P672, P673, P674, P675, P676, P677, P678, P679, P679, P680, P681, P682, P683, P684, P685, P686, P687, P688, P689, P689, P690, P691, P692, P693, P694, P695, P696, P697, P698, P698, P699, P699, P700, P701, P702, P703, P704, P705, P706, P707, P708, P709, P709, P710, P711, P712, P713, P714, P715, P716, P717, P718, P719, P719, P720, P721, P722, P723, P724, P725, P726, P727, P728, P729, P729, P730, P731, P732, P733, P734, P735, P736, P737, P738, P739, P739, P740, P741, P742, P743, P744, P745, P746, P747, P748, P749, P749, P750, P751, P752, P753, P754, P755, P756, P757, P758, P759, P759, P760, P761, P762, P763, P764, P765, P766, P767, P768, P769, P769, P770, P771, P772, P773, P774, P775, P776, P777, P778, P779, P779, P780, P781, P782, P783, P784, P785, P786, P787, P788, P789, P789, P790, P791, P792, P793, P794, P795, P796, P797, P798, P798, P799, P799, P800, P801, P802, P803, P804, P805, P806, P807, P808, P809, P809, P810, P811, P812, P813, P814, P815, P816, P817, P818, P819, P819, P820, P821, P822, P823, P824, P825, P826, P827, P828, P829, P829, P830, P831, P832, P833, P834, P835, P836, P837, P838, P839, P839, P840, P841, P842, P843, P844, P845, P846, P847, P848, P849, P849, P850, P851, P852, P853, P854, P855, P856, P857, P858, P859, P859, P860, P861, P862, P863, P864, P865, P866, P867, P868, P869, P869, P870, P871, P872, P873, P874, P875, P876, P877, P878, P879, P879, P880, P881, P882, P883, P884, P885, P886, P887, P888, P889, P889, P890, P891, P892, P893, P894, P895, P896, P897, P898, P898, P899, P899, P900, P901, P902, P903, P904, P905, P906, P907, P908, P909, P909, P910, P911, P912, P913, P914, P915, P916, P917, P918, P919, P919, P920, P921, P922, P923, P924, P925, P926, P927, P928, P929, P929, P930, P931, P932, P933, P934, P935, P936, P937, P938, P939, P939, P940, P941, P942, P943, P944, P945, P946, P947, P948, P949, P949, P950, P951, P952, P953, P954, P955, P956, P957, P958, P959, P959, P960, P961, P962, P963, P964, P965, P966, P967, P968, P969, P969, P970, P971, P972, P973, P974, P975, P976, P977, P978, P979, P979, P980, P981, P982, P983, P984, P985, P986, P987, P988, P988, P989, P989, P990, P991, P992, P993, P994, P995, P996, P997, P998, P998, P999, P999, P1000, P1001, P1002, P1003, P1004, P1005, P1006, P1007, P1008, P1009, P1009, P1010, P1011, P1012, P1013, P1014, P1015, P1016, P1017, P1018, P1019, P1019, P1020, P1021, P1022, P1023, P1024, P1025, P1026, P1027, P1028, P1029, P1029, P1030, P1031, P1032, P1033, P1034, P1035, P1036, P1037, P1038, P1039, P1039, P1040, P1041, P1042, P1043, P1044, P1045, P1046, P1047, P1048, P1049, P1049, P1050, P1051, P1052, P1053, P1054, P1055, P1056, P1057, P1058, P1059, P1059, P1060, P1061, P1062, P1063, P1064, P1065, P1066, P1067, P1068, P1069, P1069, P1070, P1071, P1072, P1073, P1074, P1075, P1076, P1077, P1078, P1079, P1079, P1080, P1081, P1082, P1083, P1084, P1085, P1086, P1087, P1088, P1088, P1089, P1089, P1090, P1091, P1092, P1093, P1094, P1095, P1096, P1097, P1098, P1098, P1099, P1099, P1100, P1101, P1102, P1103, P1104, P1105, P1106, P1107, P1108, P1109, P1109, P1110, P1111, P1112, P1113, P1114, P1115, P1116, P1117, P1118, P1119, P1119, P1120, P1121, P1122, P1123, P1124, P1125, P1126, P1127, P1128, P1129, P1129, P1130, P1131, P1132, P1133, P1134, P1135, P1136, P1137, P1138, P1139, P1139, P1140, P1141, P1142, P1143, P1144, P1145, P1146, P1147, P1148, P1149, P1149, P1150, P1151, P1152, P1153, P1154, P1155, P1156, P1157, P1158, P1159, P1159, P1160, P1161, P1162, P1163, P1164, P1165, P1166, P1167, P1168, P1169, P1169, P1170, P1171, P1172, P1173, P1174, P1175, P1176, P1177, P1178, P1179, P1179, P1180, P1181, P1182, P1183, P1184, P1185, P1186, P1187, P1188, P1188, P1189, P1189, P1190, P1191, P1192, P1193, P1194, P1195, P1196, P1197, P1198, P1198, P1199, P1199, P1200, P1201, P1202, P1203, P1204, P1205, P1206, P1207, P1208, P1209, P1209, P1210, P1211, P1212, P1213, P1214, P1215, P1216, P1217, P1218, P1219, P1219, P1220, P1221, P1222, P1223, P1224, P1225, P1226, P1227, P1228, P1229, P1229, P1230, P1231, P1232, P1233, P1234, P1235, P1236, P1237, P1238, P1239, P1239, P1240, P1241, P1242, P1243, P1244, P1245, P1246, P1247, P1248, P1249, P1249, P1250, P1251, P1252, P1253, P1254, P1255, P1256, P1257, P1258, P1259, P1259, P1260, P1261, P1262, P1263, P1264, P1265, P1266, P1267, P1268, P1269, P1269, P1270, P1271, P1272, P1273, P1274, P1275, P1276, P1277, P1278, P1279, P1279, P1280, P1281, P1282, P1283, P1284, P1285, P1286, P1287, P1288, P1288, P1289, P1289, P1290, P1291, P1292, P1293, P1294, P1295, P1296, P1297, P1298, P1298, P1299, P1299, P1300, P1301, P1302, P1303, P1304, P1305, P1306, P1307, P1308, P1309, P1309, P1310, P1311, P1312, P1313, P1314, P1315, P1316, P1317, P1318, P1319, P1319, P1320, P1321, P1322, P1323, P1324, P1325, P1326, P1327, P1328, P1329, P1329, P1330, P1331, P1332, P1333, P1334, P1335, P1336, P1337, P1338, P1339, P1339, P1340, P1341, P1342, P1343, P1344, P1345, P1346, P1347, P1348, P1349, P1349, P1350, P1351, P1352, P1353, P1354, P1355, P1356, P1357, P1358, P1359, P1359, P1360, P1361, P1362, P1363, P1364, P1365, P1366, P1367, P1368, P1369, P1369, P1370, P1371, P1372, P1373, P1374, P1375, P1376, P1377, P1378, P1379, P1379, P1380, P1381, P1382, P1383, P1384, P1385, P1386, P1387, P1388, P1388, P1389, P1389, P1390, P1391, P1392, P1393, P1394, P1395, P1396, P1397, P1398, P1398, P1399, P1399, P1400, P1401, P1402, P1403, P1404, P1405, P1406, P1407, P1408, P1409, P1409, P1410, P1411, P1412, P1413, P1414, P1415, P1416, P1417, P1418, P1419, P1419, P1420, P1421, P1422, P1423, P1424, P1425, P1426, P1427, P1428, P1429, P1429, P1430, P1431, P1432, P1433, P1434, P1435, P1436, P1437, P1438, P1439, P1439, P1440, P1441, P1442, P1443, P1444, P1445, P1446, P1447, P1448, P1449, P1449, P1450, P1451, P1452, P1453, P1454, P1455, P1456, P1457, P1458, P1459, P1459, P1460, P1461, P1462, P1463, P1464, P1465, P1466, P1467, P1468, P1469, P1469, P1470, P1471, P1472, P1473, P1474, P1475, P1476, P1477, P1478, P1479, P1479, P1480, P1481, P1482, P1483, P1484, P1485, P1486, P1487, P1488, P1488, P1489, P1489, P1490, P1491, P1492, P1493, P1494, P1495, P1496, P1497, P1498, P1498, P1499, P1499, P1500, P1501, P1502, P1503, P1504, P1505, P1506, P1507, P1508, P1509, P1509, P1510, P1511, P1512, P1513, P1514, P1515, P1516, P1517, P1518, P1519, P1519, P1520, P1521, P1522, P1523, P1524, P1525, P1526, P1527, P1528, P1529, P1529, P1530, P1531, P1532, P1533, P1534, P1535, P1536, P1537, P1538, P1539, P1539, P1540, P1541, P1542, P1543, P1544, P1545, P1546, P1547, P1548, P1549, P1549, P1550, P1551, P1552, P1553, P1554, P1555, P1556, P1557, P1558, P1559, P1559, P1560, P1561, P1562, P1563, P1564, P1565, P1566, P1567, P1568, P1569, P1569, P1570, P1571, P1572, P1573, P1574, P1575, P1576, P1577, P1578, P1579, P1579, P1580, P1581, P1582, P1583, P1584, P1585, P1586, P1587, P1588, P1588, P1589, P1589, P1590, P1591, P1592, P1593, P1594, P1595, P1596, P1597, P1598, P1598, P1599, P1599, P1600, P1601, P1602, P1603, P1604, P1605, P1606, P1607, P1608, P1609, P1609, P1610, P1611, P1612, P1613, P1614, P1615, P1616, P1617, P1618, P1619, P1619, P1620, P1621, P1622, P1623, P1624, P1625, P1626, P1627, P1628, P1629, P1629, P1630, P1631, P1632, P1633, P1634, P1635, P1636, P1637, P1638, P1639, P1639, P1640, P1641, P1642, P1643, P1644, P1645, P1646, P1647, P1648, P1649, P1649, P1650, P1651, P1652, P1653, P1654, P1655, P1656, P1657, P1658, P1659, P1659, P1660, P1661, P1662, P1663, P1664, P1665, P1666, P1667, P1668, P1669, P1669, P1670, P1671, P1672, P1673, P1674, P1675, P1676, P1677, P1678, P1679, P1679, P1680, P1681, P1682, P1683, P1684, P1685, P1686, P1687, P1688, P1688, P1689, P1689, P1690, P1691, P1692, P1693, P1694, P1695, P1696, P1697, P1698, P1698, P1699, P1699, P1700, P1701, P1702, P1703, P1704, P1705, P1706, P1707, P1708, P1709, P1709, P1710, P1711, P1712, P1713, P1714, P1715, P1716, P1717, P1718, P1719, P1719, P1720, P1721, P1722, P1723, P1724, P1725, P1726, P1727, P1728, P1729, P1729, P1730, P1731, P1732, P1733, P1734, P1735, P1736, P1737, P1738, P1739, P1739, P1740, P1741, P1742, P1743, P1744, P1745, P1746, P1747, P1748, P1749, P1749, P1750, P1751, P1752, P1753, P1754, P1755, P1756, P1757, P1758, P1759, P1759, P1760, P1761, P1762, P1763, P1764, P1765, P1766, P1767, P1768, P1769, P1769, P1770, P1771, P1772, P1773, P1774, P1775, P1776, P1777, P1778, P1779, P1779, P1780, P1781, P1782, P1783, P1784, P1785, P1786, P1787, P1788, P1788, P1789, P1789, P1790, P1791			